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IS 81 (1989): Dehydrated castor oil for paints [CHD 20:
Paints, Varnishes and Related Products]

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IS 81 : 1989

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2009

Indian Standard

DEHYDRATED CASTOR OIL FOR PAINTS – SPECIFICATION

(Second Revision)

भारतीय मानक

रंग रोगनों के लिए निर्जलीकृत अरण्डी का तेल – विशिष्ट

UDC 665·345·6 : 667·621·4

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

Raw Materials for Paints Industry Sectional Committee, CDC 50

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards on 1 March 1989, after the draft finalized by the Raw Materials for Paints Industry Sectional Committee had been approved by the Chemical Division Council.

This standard was originally published in 1950 largely based on the interim co-ordinated draft prepared by the Standing Committee on Specifications for Paints and Allied Stores of the General Headquarters, India (now Army Headquarters) and was revised in 1971.

In this revision, the limits for colour, relative density for Type 2, viscosity, acid value for Type 1, saponification value, iodine value (woburn), and hydroxyl value (acetyl value) have been modified and new requirements for refractive index and iodine value (wijs) have been prescribed. Moreover, drying time and freedom from mineral acids requirements have been replaced by film characteristics and pH of 10 percent aqueous extract.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressed the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DEHYDRATED CASTOR OIL FOR PAINTS — SPECIFICATION

(Second Revision)

1 SCOPE

This standard prescribes the requirements and methods of sampling and test for dehydrated castor oil for paints.

2 REFERENCES

<i>IS No.</i>	<i>Title</i>
IS 74 : 1979	Methods of sampling and test for drying oils for paints (<i>second revision</i>)
IS 354 (Part I) : 1986	Methods of sampling and test for resins for paints : Part I General test method
IS 435 : 1973	Specification for castor oil (<i>second revision</i>)
IS 1303 : 1983	Glossary of terms relating to paints (<i>second revision</i>)

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given under 2 of IS 74 : 1979 and IS 1303 : 1983 shall apply.

4 GRADES

4.1 There shall be two grades:

- a) *Grade 1*, monomeric, and
- b) *Grade 2*, bodied.

4.1.1 Grade 2 shall have two types:

- a) *Type 1*, low bodied (5 poises), and
- b) *Type 2*, high bodied (50 poises).

5 REQUIREMENTS

5.1 Description

The material shall be genuine castor oil (conforming to commercial grade of IS 435 : 1973) which has been suitably dehydrated and, if required, further heat treated for polymerization. It shall be clear and free from suspended matter, sediment or other insoluble matter.

5.2 The material shall also comply with the requirements given in Table 1.

Table 1 Requirements for Dehydrated Castor Oil

Sl No.	Characteristic	Requirement				Method of Test, Ref. to		
		Grade 1		Grade 2		Annex	Cl No. of IS 74 : 1979	Cl No. of IS 354 (Part I) : 1986
		Type 1	Type 2	Type 1	Type 2			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
i)	Colour (<i>Y + 5 R</i> Units in 1.25 cm glass cell) <i>Max</i>	10	12	20	—	5	—	—
ii)	Relative density at 27/27°C	0.920 to 0.930	0.923 to 0.934	0.940 to 0.960	—	6	—	—
iii)	Viscosity at 27°C, poises (<i>see Note</i>)	1.9, <i>Max</i>	5 ± 1	50 ± 10	—	7	—	—
iv)	Refractive index, at 27°C	1.478 5 to 1.480 5	to 1.480 0 to 1.483 0	to 1.484 0 to 1.487 0	—	8	—	—
v)	Acid value, mg/KOH/g, <i>Max</i>	6	10	12	—	9	—	—
vi)	Saponification value, mg KOH/g	←—————188-195————→			—	10	—	—
vii)	Iodine value							
a)	(Wijs) <i>Min</i>	127	120	105	—	11.1	—	—
b)	(Woburn) <i>Min</i>	145	125	115	—	11.2	—	—
viii)	Hydroxyl value (acetyl value), <i>Max</i>	15	15	15	—	—	—	17
ix)	pH of 10 percent aqueous extract	←————5.5 to 7.0————→			A	—	—	—
x)	Film characteristics							
a)	Appearance	clear and bit free	clear and bit free	clear and bit free	B	—	—	—
b)	Surface dry	3	3	3	—	15	—	—

NOTE — Poise = stokes × relative density.

5.3 Freedom from Lead

When required to be lead-free, the material shall not contain more than 0·03 percent of lead or compounds of lead or both (calculated as Pb) when tested as prescribed in 22 of IS 74 : 1979.

6 PACKING AND MARKING

6.1 Packing

The material shall be supplied in suitable containers as agreed between the purchaser and the manufacturer.

6.2 Marking

The containers shall be marked with the following particulars:

- a) Name and grade/type of the material;

- b) Manufacturer's name and his recognized trade-mark, if any;
- c) Net mass of the material in the container;
- d) Batch number or lot number in code or otherwise; and
- e) Month and year of manufacture.

7 SAMPLING

Representative samples of the material shall be drawn as prescribed in 3 of IS 74 : 1979.

8 QUALITY OF REAGENTS

Unless otherwise specified, pure chemicals and distilled water shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

[*Table 1, Sl No. (ix)*]

pH OF 10 PERCENT AQUEOUS EXTRACT

A-1 APPARATUS

A-1.1 pH Meter

A-2 PROCEDURE

A-2.1 Take 10 g of dehydrated castor oil (DCÖ) sample in a clean and dry breaker. Add 90 ml of distilled water and stir for 10 minutes at room temperature. Determine the pH of this aqueous extract with pH meter and report the result.

ANNEX B

[*Table 1, Sl No. (x)*]

DETERMINATION OF FILM CHARACTERISTICS

B-0 OUTLINE OF THE METHOD

B-0.1 The material shall be examined for film characteristics, such as, appearance and surface dry time after the panel which has been prepared with the material after diluting to have viscosity between 1·7 to 2·5 poises containing fixed quality of driers, is exposed to the diffused daylight for a specific period.

B-1 REAGENTS

B-1.1 Petroleum Hydrocarbon Solvent

B-1.2 Cobalt Octoate or Naphthenate Solution in Petroleum Hydrocarbon Solvent

B-2 APPARATUS

B-2.1 Clear Glass Panels

105 mm × 150 mm or 75 mm × 150 mm in size and shall be reasonably planed, free from surface irregularities.

B-3 CLEANING OF GLASS PANELS

B-3.1 All oil or grease shall be removed from the panel by dipping in benzene and rubbing with a soft and clean rag. The panel shall be rinsed thoroughly with water and well washed with soap and water until the wetted panel shows no water breaks when held in a vertical position. The panel

shall then be rinsed with alcohol and allowed to dry in the air in a dust free chamber.

B-4 PROCEDURE

B-4.1 Add acid cobalt octoate or naphthenate solution in petroleum hydrocarbon solvents to the material to give a cobalt content of 0·5 percent. Grade 2 material shall be diluted with petroleum hydrocarbon solvents so as to attain a viscosity of 1·7 to 2·5 poises at 27°C before adding the cobalt salts. Then the material shall be applied by pouring on clear and clean glass panel. The panel, after application, shall be kept in a vertical

position in a well-ventilated room so that its surface is illuminated by diffused day light. The panels shall first be examined for appearance, that is clarity and freedom from bittiness, between 3 to 5 minutes after application and then the panel shall be examined for surface time after specific intervals.

B-4.1.1 The material shall be considered to pass the test if the film is clear and bit free when examined between 3-5 minutes after application of the material and surface dry time shall be less than 3 hours.

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